

REMARKS

The foregoing Amendment and remarks which follow are responsive to the Final Office Action mailed April 22, 2005 in relation to the above-identified patent application. In that Office Action, the Examiner rejected Claims 16, 17, 20, 23-26, 29-32 and 35 under 35 U.S.C. Section 102(e) as being anticipated by the Okumura et al. reference. Additionally, the Examiner rejected Claims 21-22, 19, 28 and 34 under 35 U.S.C. Section 103(a) as being unpatentable over the combination of the Okumura et al. reference and Applicant's purported Admitted Prior Art Figures 1 and 3.

Summary of Claim Amendments:

By this Amendment, Applicant has amended Claims 16, 19-22, 24, 25, 28-31, 34 and 35. More particularly, independent Claim 16 has been amended to describe at least portions of the bottom surfaces of the outer leads of each set each being of a first length and at least a portion of the bottom surface of the inner lead of each set being of a second length which is unequal to the first length. As further recited in amended Claim 16, an encapsulation material covers the leadframe and the semiconductor chip such that the portions of the bottom surfaces of the inner and outer leads which are of the second length and the first length, respectively, are completely exposed in the encapsulation material. Claims 19-22 and 24 have each been amended to make the language thereof consistent to that of amended Claim 16.

Independent Claim 25 has been amended in a manner analogous to that of independent Claim 16, with Claims 28-30 being amended to make the language thereof consistent to that of amended Claim 25. Independent Claim 31 has been amended to describe the leads as each having a bottom surface including at least a portion which is completely exposed in the encapsulation material, with the portion of the bottom surface of each of the outer leads of each set which is completely exposed and the encapsulation material being of a first length, and the portion of the bottom surface of the inner lead of each set which is completely exposed and the encapsulation material being of a second length which is unequal to the first length. Claims 34 and 35 have each been amended to make the language thereof consistent to that of amended Claim 31.

As is apparent from the foregoing, in each of amended Claims 16, 25 and 31, at least portions of the bottom surfaces of the outer leads of each set are described as each being of a first length, with at least a portion of the bottom surface of the inner lead of each set being of a second length which is unequal to the first length. Further, the portions of the bottom surfaces of the inner and outer leads which are of the second length and the first length, respectively, are described in amended Claims 16, 25 and 31 as being completely exposed in the encapsulation material. For reasons which will be discussed in more detail below, Applicant respectfully submits that the Okumura et al. reference, relied upon by the Examiner for its teaching regarding leads of differing lengths in a semiconductor package, does not teach, suggest or show leads having bottom surface portions which are completely exposed in an encapsulation material and are of unequal lengths.

An Overview of the Cited Okumura et al. Reference:

As a preliminary matter, Applicant notes that Okumura et al. reference cited in the latest Office Action has previously been relied upon by the Examiner as a basis for rejecting for prior versions of the pending claims, and has been distinguished from the present invention and overcome as an impediment to patentability for the reasons set forth below.

More particularly, Applicant has previously demonstrated that those embodiments of the semiconductor device described in the Okumura et al. reference which appear to depict leads of differing lengths are the fifth embodiment shown in Figures 5(a) and 5(b), and the sixth embodiment shown in Figures 6(a) and 6(b). The semiconductor device of the fifth embodiment is described as including leads 13 which barely protrude from the side faces of the sealing resin 15, as is shown in Figure 5(a). Each lead 13 is further described as including a stepped portion 22 formed by removing an inner bottom portion thereof to provide enhanced adhesion between the lead 13 and the sealing resin 15 (column 14, lines 35-38). As is apparent from consideration of the specification of the Okumura et al. reference and the showings in Figures 5(a) and 5(b) thereof, the bottom surfaces of the leads 13 which are actually exposed in the sealing resin 15 are of identical lengths. Though the half-etched portions of the leads 13 which extend inwardly from the stepped portions 22 are of differing lengths, these half-etched portions are completely covered by the sealing resin 15, and are not exposed therein. The exposure in the sealing resin 15 of only the identically

sized bottom surfaces of the leads 13 is clearly shown in Figure 5(a), and is apparent from Figure 5(b). The same holds true in relation to the sixth embodiment of the semiconductor device shown in Figures 6(a) and 6(b).

Independent Claims 16, 25 and 31 are not Anticipated by the Okumura et al. Reference:

As explained above, each of independent Claims 16, 25, and 31 now pending in the present application describe at least portions of the bottom surfaces of the outer leads of each set as each being of a *first length*, with at least a portion of the bottom surface of the inner lead of each set being of a *second length which is unequal to the first length*. Further, the portions of the bottom surfaces of the inner and outer leads which are of the second length and the first length, respectively, are described in amended Claims 16, 25 and 31 as being *completely exposed* in the encapsulation material. As is specifically described in the specification of the present application, these differing lengths of the bottom surface portions of the leads which are exposed in the encapsulation material provide increased surface area and thus greater solder joint strength at the interface with the motherboard. These advantages are not provided by the Okumura et al. reference, in that the bottom surfaces of the leads 13 which are actually exposed in the sealing resin 15 are not shown or described as being of differing lengths to provide increased surface area, but rather are of identical length as indicated above.

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Conclusion:

On the basis of the foregoing, Applicant respectfully submits that the stated grounds of rejection have been overcome, and that Claims 16, 17, 19-26, 28-32, 34 and 35 are now in condition for allowance. Additionally, Applicant respectfully submits that the present Amendment does not raise new issues which would require further searching on the part of the Examiner, and therefore respectfully request that the same be considered and entered by the Examiner. An early Notice of Allowance is therefore respectfully requested.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

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